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32 Candidate repellents, oral and dermal toxicants, and fumigants for Brown Tree Snake control

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Many chemicals are described in the popular and scientific literature for snake control. However, in the United States, only 1 pesticide product, Snake-A-Way®, is registered with U.S. EPA as a snake repellent. The active ingredients in Snake-A-Way® are naphthalene and sulfur. Toxicants reported to control snakes include drinking water with nicotine sulfate, eggs poisoned with strychnine, and insecticide sprays containing aldrin, DDT, dieldrin, heptachlor, or toxaphene. Adhesives containing the organophosphate, dimpylate, or the carbamate, methomyl, have been used in open-type traps. Several fumigants have been reported as effective for snakes. They include calcium cyanide which liberates hydrocyanic acid for use in burrows and buildings, and other gases, such as carbon bisulfide, formaldehyde, tetrachloroethane, and methyl bromide. Methyl bromide which is registered with U.S. EPA for many uses, was recently demonstrated on Guam to also be a very effective fumigant for Brown Tree Snakes. Dosage rates as low as 1.5 lbs methyl bromide/1000 ft^3 for a 1 hr exposure period produced 100% mortality. Besides methyl bromide, sulfuryl fluoride and aluminum or magnesium phosphide, which release the toxic gas phosphine, are also potential cargo fumigants for Brown Tree Snakes. Natural and synthetic pyrethrins, with synergists formulated for use as insecticides, are reported to be lethal to snakes. Pyrethrins offer the possibility of developing formulations that could be used as fumigants for cargo or living quarters, or as oral or dermal toxicants for reduction of snake populations. Any oral or dermal snake toxicant would require an effective, safe, and selective delivery system.